



URBAN DRAINAGE AND FLOOD CONTROL DISTRICT COOPERATING TECHNICAL PARTNERS MAPPING ACTIVITY STATEMENT

Mapping Activity Statement No. 8 – Digital Flood Insurance Rate Map Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated May 17th, 1999, between Urban Drainage and Flood Control District (UDFCD) and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement (MAS) No. 8 is as follows.

SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report information for that portion of Douglas County and Incorporated Areas located within the UDFCD. The DFIRM and FIS report information will be produced in the FEMA Countywide Format, and shall be on the North American Vertical Datum (NAVD) of 1988. The Colorado Water Conservation Board (CWCB) is responsible for preparing similar information for the remainder of Douglas County and Incorporated Areas. The two efforts will be coordinated to produce a complete set of DFIRMS and a FIS report.

In addition the Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in Table 1 below.

Table 1. Updated Flood Hazard Data

Flooding Source	Reach Limits	Hydrologic Analyses	Hydraulic Analyses	Floodplain Mapping	Redelineation Using Effective Flood Profiles and Updated Topographic Data	Refinement or Creation of Zone A
Cherry Creek	North County line to Scott Road	Existing	Existing	X	N/A	N/A
Dad Clark Gulch*	Firm Limits or greater	N/A	N/A	N/A	N/A	X
Daniels Park Drain*	“	Existing	Existing	X	N/A	N/A
Drainagewa y 6600-02*	“	Existing	Existing	X	N/A	N/A
East Dad Clark Gulch*	“	N/A	N/A	N/A	N/A	X

East Willow Creek*	Firm Limits or greater	Existing	Existing	X	N/A	N/A
Fonder Draw	“	In Progress	In Progress	X	N/A	N/A
Highlands Gulch*	“	Existing	Existing	X	N/A	N/A
Indian Creek*	“	Existing	Existing	X	N/A	N/A
Jarre Creek*	“	Existing	Existing	X	N/A	N/A
Kinney Creek	“	In Progress	In Progress	X	N/A	N/A
Lehigh Gulch*	“	Existing	Existing	X	N/A	N/A
Lemon Gulch	“	Existing	Existing	N/A	N/A	X
Little Willow Creek*	“	Existing	Existing	X	N/A	N/A
Louviers Gulch*	“	Existing	Existing	X	N/A	N/A
Drainageway 6604-01*	“	Existing	Existing	X	N/A	N/A
Marcy Gulch*	“	Existing	Existing	N/A	N/A	X
Oak Gulch	“	Existing	Existing	N/A	N/A	X
Plum Creek*	Sta 145+00 to 420+00	Existing	Existing	X	N/A	N/A

Rainbow Creek*	Firm Limits or greater	Existing	Existing	X	N/A	N/A
Spring Gulch*	“	Existing	Existing	N/A	N/A	X
Sterling Gulch*	“	Existing	Existing	X	N/A	N/A
West Plum Creek*	“	Existing	Existing	X	N/A	N/A
Willow Creek*	“	Existing	Existing	X	N/A	N/A

This Flood Map Project will be completed by the following

- UDFCD;
- CWCB;
- ICON Engineering, Inc.; and
- FEMA Flood Map Production Coordination Contractor (MCC).

The activities for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in Table 1-1. The sections of this MAS that follow the table below describe the specific activities, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map components.

Table 1-1. Summary of Project Activities and Assignments

Activities	CTP	FEMA (MCC)
Activity 1 – Independent QA/QC Review of Existing Data Studies		X
Activity 2 – Floodplain Mapping (Detailed Riverine)	X	
Activity 2A – Floodplain Mapping (Refinement or Creation of Zone A)	X	
Activity 2B – Independent QA/QC Review of Floodplain Mapping (Revised Areas)		X
Activity 3 – Base Map Acquisition	X	
Activity 4– DFIRM Production (Non-Revised Areas)	X	

Activity 4A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)		X
Activity 5 – DFIRM Production (Merge Revised and Non-Revised Information)	X	
Activity 5A – Application of DFIRM Graphic and Database Specifications	X	
Activity 5B – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications		X
Activity 6 – Preliminary DFIRM and FIS Report Distribution	X	X
Activity 7 – Post-Preliminary Processing	X	X

Activity 1 - Independent QA/QC Review of Existing Data Studies

Responsible Mapping Partner: FEMA

Scope: FEMA or their designee shall review the technical, scientific, and other information submitted by UDFCD to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM. This work shall include, at a minimum, the activities listed below.

- Review the submittal for regulatory adequacy, completeness of required information, and supporting data and documentation.
 - Use of acceptable model(s);
 - Ensure the existing data provides at least the level of detail shown on the effective FIRM;
 - Flood discharges;
 - Regulatory floodway computation methods; and
 - Tie-in to upstream and downstream non-revised Flood Profiles.
- Maintain records of all contacts, reviews, recommendations, and actions.
- Maintain an archive of all data submitted for hydraulic modeling review.

Standards: All work under Activity 1 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Activity 2 - Floodplain Mapping (Detailed Riverine)

Responsible Mapping Partner: UDFCD

Scope: UDFCD shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries (if required) for the flooding sources for which detailed hydrologic, and/or hydraulic analyses were performed. UDFCD shall incorporate all existing data studies, ensuring that these studies are referenced to NAVD 88. In addition, UDFCD shall incorporate the results of all effective Letters of Map Change (LOMCs) within the revised areas as appropriate. Also, UDFCD shall address all concerns or questions regarding Activity 2 that are raised by FEMA or their designee, during the independent QA/QC review under Activity 2B.

Standards: All work under Activity 2 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping for the flooding sources described in Table 1, UDFCD shall submit the results FEMA or their designee, for an independent QA/QC review under Activity 2B. The mapping for the remaining flooding sources is to be submitted for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, UDFCD shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM;
- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined under Activity 2B; and
- An explanation for the use of existing topography for the studied reaches, if appropriate.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/firm_gsam.pdf.

Activity 2A - Floodplain Mapping (Refinement or Creation of Zone A)

Responsible Mapping Partner: UDFCD

Scope: UDFCD shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources listed earlier in this MAS. In addition, UDFCD shall address all concerns or questions regarding Activity 2A that are raised by FEMA or their designee, during the independent QA/QC review under Activity 2B. UDFCD shall utilize existing Flood Hazard Area Delineation studies to obtain these floodplain boundaries.

UDFCD may expand on the approaches for analyzing Zone A areas outlined in *Guidelines and Specifications for Flood Hazard Mapping Partners* and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with the FEMA Regional Project Officer identified in Section 11 of this MAS before analysis and mapping begin.

Standards: All work under Activity 2A shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping for the flooding sources described in Table 1, UDFCD shall submit the results to FEMA or their designee, for an independent QA/QC review under Activity 2B. UDFCD shall submit the mapping for the remaining flooding sources for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, UDFCD shall make the following products available to FEMA:

- Digital work maps showing the 1-percent-annual-chance floodplain boundary delineations, flood insurance risk zone labels, and all applicable base map features;
- Written summary of the analysis methodologies;
- Any backup or supplemental information, including supporting calculations and assumptions for any computed 1-percent-annual-chance water-surface elevations used in the mapping required for the independent QA/QC review under Activity 2B;
- Hardcopy and digital versions of input and output for any computer programs that were used;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

If automated GIS-based models are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/fhm_gsam.pdf.

Activity 2B - Independent QA/QC Review of Floodplain Mapping (Revised Areas)

Responsible Mapping Partner: FEMA or their designee

Scope: FEMA or their designee, shall review the floodplain mapping submitted by UDFCD under Activities 2 and 2A to ensure that the results of the analyses performed are accurately represented. This work shall include, at a minimum, the activities listed below.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Review the floodplain widths at cross sections as shown on the work maps to ensure they match the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure they match the Flood Profiles.
- Review the flood insurance risk zones as shown on the work maps to ensure they are labeled properly.
- Review the Floodway Data Tables, Profiles and BFEs are all properly referenced to NAVD 88.
- Review the DFIRM mapping files to ensure they were prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- Review the metadata files to ensure they include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under Activity 2B shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA or their designee, shall make the following products available to FEMA:

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and

- An annotated work map with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/fhm_gsam.pdf.

Activity 3 - Base Map Acquisition

Responsible Mapping Partner: UDFCD

Scope: Activity 3 consists of obtaining the digital base map for the project. UDFCD shall provide the digital base map. The required activities are as follows:

- Obtain digital files (raster or vector) of the base map.
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.
- Populate the DFIRM database with the information required by FEMA.

Standards: All work under Activity 3 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, UDFCD shall make the following products available to FEMA:

- Written certification that the digital data meet the minimum standards and specifications; and
- Documentation that FEMA can use the digital base map.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/fhm_gsam.pdf.

Activity 4 – DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: UDFCD

Scope: For all flooding sources except those segments for which updated flood data will be developed under Activities 1 through 2B, UDFCD shall convert the information shown on the effective FIRM and Flood Boundary Floodway Map (FBFM) panels for all incorporated and unincorporated areas of Douglas County to digital format in conformance with FEMA DFIRM specifications. UDFCD shall use the base map acquired under Activity 3 for the conversion. The scope of Activity 4 covers the digitization of approximately 60 FIRM panels. UDFCD also shall incorporate the results of LOMCs issued by FEMA since the date of the current effective FIRM for each affected community. UDFCD will convert the existing floodplain elevation information from the current elevation datum of NGVD 29 to NAVD 88, using methodologies specified by FEMA in Appendix B of the *Guidelines and Specifications for Flood Hazard Mapping Partners*. The Flood Profiles and Floodway Data Table information shall also be converted to NAVD 88. Also, UDFCD shall address all comments and

questions regarding Activity 4 that are raised by FEMA or their designee, during the independent QA/QC review under Activity 4A.

UDFCD shall not digitize the flood theme for those segments of flooding sources for which updated flood data will be developed. Rather, UDFCD shall leave these as “holes” in the digital flood theme that will be filled in as part of Activity 5 using the digital flood data developed under Activities 2 and 2A.

Standards: All work under Activity 4 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, UDFCD shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM, including a check that the road and floodplain relationship is maintained for all non-revised areas.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/firm_gsam.pdf.

Activity 4A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: FEMA or their designee

Scope: FEMA or their designee, shall review the DFIRM panels submitted by UDFCD under Activity 4 to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and FBFMs for the area mapped. This work shall include, at a minimum, checking the following:

- Cross sections were properly located and oriented as shown on the FIRM or FBFM.
- BFEs are properly located and agree with the BFEs shown on the FIRM.
- Regulatory floodway widths agree with the widths shown on the FIRM or FBFM.
- Review the Floodway Data Tables, Profiles and BFEs are all properly referenced to NAVD 88.

- The 1 and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the FIRM and the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- Flood insurance risk zone designations are indicated properly.
- Road and floodplain relationships are maintained for all unrevised areas.
- DFIRM mapping files meet the GIS file and database format requirements specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those requirements for content and attribution.
- Metadata files describing the DFIRM data include the required information.

Standards: All work under Activity 4A shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA or their designee, shall make the following products available to FEMA:

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/firm_gsam.pdf.

Activity 5 –DFIRM Production (Merging Revised and Non-Revised Information)

Responsible Mapping Partner: UDFCD

Scope: Upon completion of the floodplain mapping activities (Activities 2 and/or 2A) for the revised flooding sources and the DFIRM production for non-revised areas (Activity 4), UDFCD shall merge the digital floodplain data into a single, updated DFIRM. This work is to include tie-in of flood hazard information for areas that were not studied as part of the Flood Map Project documented in this MAS. UDFCD also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries with contiguous communities that were not studied as part of the Flood Map Project documented in this MAS. UDFCD shall coordinate with those Mapping Partners responsible for Activities 2, 2A, and 4, as necessary, to resolve any potential tie-in issues. In addition, UDFCD will coordinate with CWCB to compile their respective portions of Douglas County into a seamless countywide DFIRM coverage. CWCB has taken the lead on this effort under a separate MAS with FEMA.

Standards: All work under Activity 5 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, UDFCD shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 5A – DFIRM Production (Application of DFIRM Graphics and Database Specifications)

Responsible Mapping Partner: UDFCD

Scope: UDFCD shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Activity 5. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user). UDFCD shall coordinate with those Mapping Partners responsible for Activities 2, 2A, 4, and 5, as necessary, to resolve any problems that are identified during Activity 5A.

Standards: All work under Activity 5A shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, UDFCD shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and

- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 5B – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphics and Database Specifications

Responsible Mapping Partner: FEMA or their designee

Scope: Upon completion of the floodplain mapping activities (Activities 2 and/or 2A) and DFIRM production activities (Activities 4, 5, and 5A), FEMA or their designee, shall review the DFIRM to ensure it meets current FEMA graphic specifications. In addition, FEMA or their designee shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. FEMA or their designee, shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, cross sections, studied streams, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- All map collar information is complete, correct, and follows the requirements specified in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- Metadata files describing the DFIRM data include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- The FIS report is prepared in the FEMA Countywide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under Activity 5B shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA or their designee, shall make the following products available to FEMA:

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/pdf/fhm/firm_gsam.pdf.

Activity 6 - Preliminary DFIRM and FIS Report Distribution

Responsible Mapping Partners: FEMA (MCC)

Scope: Activity 6 consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report for community official and general public review and comment. The activities to be performed are summarized below.

Preliminary Transmittal Letter Preparation. The MCC shall prepare letters to transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

Final QA/QC Review of Preliminary DFIRM and FIS Report: The MCC shall perform a final QA/QC review of the Preliminary DFIRM and FIS report, including all data tables, Flood Profiles, and other components of the FIS report. The QA/QC review procedures shall be consistent with the *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Discrepancy Resolution: The MCC shall work with UDFCD and FEMA as appropriate to resolve discrepancies identified during the final QA/QC review.

Distribution of Preliminary DFIRM and FIS Report: The MCC shall distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

News Release Preparation: The MCC shall prepare news release notifications of BFE changes for all affected communities if appropriate and perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The MCC shall file the notifications for later submittal to FEMA for review.

Preliminary Summary of Map Actions (SOMA) Preparation: The MCC shall prepare Preliminary SOMAs for all affected communities if appropriate. The SOMA shall list pertinent information regarding LOMCs that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All work under Activity 6 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners* and the requirements documented

in Section 1 and Appendix A of the FEMA *Document Control Procedures Manual*. The MCC shall make the products listed below available to FEMA.

- Preliminary transmittal letters shall be prepared. These letters and any additional letters requested by FEMA shall be prepared in accordance with the current version of the FEMA *Document Control Procedures Manual*.
- Preliminary copies of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- Revised DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- Revised DFIRM database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- Revised metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM shall be provided.

Activity 7 - Post-Preliminary Processing

Responsible Mapping Partners: UDFCD and FEMA (MCC)

Scope: Activity 7 consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued to community officials and the public for review and comment. The activities to be performed are summarized below.

Initiation of Statutory 90-Day Appeal Period: When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, the MCC and UDFCD shall arrange for and verify that the following activities are completed in accordance with the current version of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- News release notifications of BFE changes are published in prominent newspapers with local circulation.
- The appropriate notices (Proposed Rules) are published in the *Federal Register*.

Resolution of Appeals and Protests: The MCC and UDFCD shall support FEMA in reviewing and resolving appeals and protests received during the 90-day appeal period. For each appeal and protest, the following activities shall be conducted as appropriate:

- Initial processing and acknowledgment of submittal;
- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses; and
- Preparation of a draft resolution letter and revised DFIRM and FIS report materials for FEMA review.

The MCC shall mail all associated correspondence upon authorization by FEMA.

Preparation of Special Correspondence: The MCC and UDFCD shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as “special correspondence”), including drafting responses for FEMA review when appropriate and finalizing responses when requested by FEMA. The MCC also shall mail the final correspondence (and enclosures if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of DFIRM and FIS Report: If necessary, the MCC and UDFCD shall work together to revise the DFIRM and FIS report at the direction of the FEMA Regional Project Officer and distribute Revised Preliminary copies of the DFIRM and FIS report to the CEO and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

Final SOMA Preparation: The MCC shall prepare Final SOMAs for the affected communities as appropriate.

Processing of Letter of Final Determination: The MCC and UDFCD shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare a Letter of Final Determination (LFDs) for each affected community for FEMA review in accordance with the FEMA *Document Control Procedures Manual*. The MCC also shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs and enclosures upon receipt of authorization from FEMA.

Processing of Final DFIRM and FIS Report for Printing: The MCC shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to the FEMA Map Service Center for printing by the U.S. Government Printing Office. The MCC also shall prepare the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

Revalidation Letter Processing. The MCC, when appropriate, shall prepare and distribute letters to the community CEOs and floodplain administrators to notify the affected communities about LOMCs for which determinations will remain in effect after the DFIRM and FIS report become effective.

Archiving Data: The MCC shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until they are transmitted to the FEMA Engineering Study Data Package Facility.

Standards: All work under Activity 7 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners* and the requirements documented in Section 1 and Appendix A of the *FEMA Document Control Procedures Manual*, the MCC and UDFCD shall make the following products available to FEMA:

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate *Federal Register* notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM negatives and final FIS report materials, including all updated data tables and Flood Profiles;
- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- LOMC Revalidation Letters if appropriate; and
- Complete, organized archived technical and administrative support data.

SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL

The Project Team members for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in the TSDN format in accordance with Appendix M of the *FEMA Guidelines and Specifications for Flood Hazard Mapping Partners*, dated February 2002. Appendix M is available for viewing or download on the FEMA Web site at http://www.fema.gov/mit/tsd/firm_gsam.pdf. Table 2-1 indicates the sections of the TSDN that apply to each mapping activity.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

Additionally, the MCC shall collect and maintain a set of products for all Activities and shall compile a comprehensive TSDN for the entire project.

Table 2-1. Mapping Activities and Applicable TSDN Sections

TSDN Section	Mapping Activities							
	1	2, 2A	2B	3	4, 4A	5, 5A	6	7
General Documentation								
Special Problem Reports	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X
Meeting Minutes/Reports	X	X	X	X	X	X	X	X
General Correspondence	X	X	X	X	X	X	X	X
Engineering Analyses								
Hydrologic Analyses	X	X	X					
Hydraulic Analyses	X	X	X					
Key to Cross-Section Labeling	X	X	X					
Key to Transect Labeling	X	X	X					
Draft FIS Report	X							
Mapping Information		X	X	X	X	X	X	X
Miscellaneous Reference Information	X	X	X	X	X	X	X	X

SECTION 3—PERIOD OF PERFORMANCE

The mapping activities outlined in this MAS will begin on August 15, 2003, and will be completed no later than January 31, 2005. The mapping activities may be terminated at the option of FEMA or UDFCD in accordance with the provisions of the Partnership Agreement dated May 17th, 1999.

SECTION 4—FUNDING/COST-SHARING

FEMA is providing funding, in the amount of _____, to UDFCD for the completion of this Flood Map Project. UDFCD shall provide any additional resources required to complete the assigned activities for this Flood Map Project.

SECTION 5—STANDARDS

The standards relevant to this Mapping Activity Statement are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* to be referenced for each mapping activity are summarized in Table 5-2.

These Guidelines are available for viewing or download from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/fhm/dl_cgs.htm.

Table 5-1. Applicable Standards for Project Activities

Applicable Standards	Activities							
	1	2, 2A	2B	3	4, 4A	5, 5A	6	7
<i>Guidelines and Specifications for Flood Hazard Mapping Partners</i> , February 2002	X	X	X	X	X	X	X	X
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002	X							
<i>Content Standards for Digital Geospatial Metadata</i> (Federal Geographic Data Committee, 1998)		X	X	X	X	X	X	X
<i>Document Control Procedures Manual</i> , December 2000						X	X	X

Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
1	Independent QA/QC Review of Existing Data Studies	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, E, F, G, H, and M
2	Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C. 4 and C.6 Appendices K, L, and M
2A	Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.3) Appendices K, L, and M
2B	Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M

Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
3	Base Map Acquisition and Preparation	Volume 1, Section 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsection 1.4.3) ----- Appendices A and B
4	Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.2) ----- Appendices K, L, and M
4A	DFIRM Production (Merging Revised and Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsection 1.4.3) ----- Appendices K, L, and M
5	DFIRM Production (Merging Revised and Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) ----- Appendices K, L, and M
5A	DFIRM Production (Application of DFIRM Graphic and Database Specifications)	Volume 1, Section 1.4 (specifically Subsection 1.4.3) ----- Appendices K, L, and M
5B	Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) ----- Appendices K, L, and M
6	Preliminary DFIRM and FIS Report Distribution	Volume 1, Section 1.4 (specifically Subsections 1.4.2 and 1.4.3) ----- Appendix C, Sections C.4 and C.6 ----- Appendices J, K, L, and M
7	Post-Preliminary Processing	Volume 1, Section 1.4 (specifically Subsection 1.4.2 and 1.4.3) ----- Appendices J, K, L, and M

SECTION 6—SCHEDULE

The activities documented in this MAS shall be completed in accordance with the project schedule shown in Table 6-1. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

Table 6-1. Project Schedule

ACTIVITIES	RESPONSIBLE PARTNER(S)	DATE DUE
Activity 1 – Independent QA/QC Review of Hydraulic Analyses	FEMA	8/22/03
Activity 2 – Floodplain Mapping (Detailed Riverine)	UDFCD	9/22/03
Activity 2A – Floodplain Mapping (Refinement or Creation of Zone A)	UDFCD	10/22/03
Activity 2B – Independent QA/QC Review of Floodplain Mapping (Revised Areas)	FEMA	11/12/03
Activity 3 – Base Map Acquisition	UDFCD	11/26/03
Activity 4 – DFIRM Production (Non-Revised Areas)	UDFCD	12/24/03
Activity 4A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	FEMA	1/14/04
Activity 5 – DFIRM Production (Merge Revised and Non-Revised Information)	UDFCD	2/4/04
Activity 5A – Application of DFIRM Graphic and Database Specifications	UDFCD	2/25/04
Activity 6 – Preliminary DFIRM and FIS Report Distribution	FEMA and UDFCD	3/1/04
Activity 7 – Post-Preliminary Processing	FEMA and UDFCD	1/31/05

SECTION 7—CERTIFICATIONS

The following certifications apply to this MAS:

Task 2 (Floodplain Mapping– Detailed Riverine or Coastal Analysis), Task 2A (Floodplain Mapping {Redelineation Using Effective Flood Profiles and Updated Topographic Data}), and Task 2A (Floodplain Mapping {Refinement or Creation of Zone A}), Task 2B (Independent QA/QC Review of Floodplain Mapping {Revised Areas}), Task 4 (DFIRM Production {Non-Revised Areas}), Task 5 (DFIRM Production {Merging Revised and Non-

Revised Information}}, and Task 5A (Application of DFIRM Graphic and Database Specifications)

The DFIRM metadata files will include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

Activity 3 (Base Map Acquisition and Preparation)

- A community official or responsible party will provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner will provide documentation that the digital base map can be used by FEMA.

SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES

Project Team members may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from the MCC, who may be contacted by telephone at 703-317-6531 or by facsimile at 703-329-3023.

General technical and programmatic information, such as FEMA 265 and the Quick-2 computer program, can be downloaded from the FEMA Web site (www.fema.gov/mit/tsd/). Specific technical and programmatic support may be provided through the MCC; such assistance should be requested through the FEMA Project Officer specified in Section 11 of this MAS.

Project Team members also may consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

SECTION 9—CONTRACTORS

UDFCD intends to use the services of ICON Engineering, Inc. as a contractor for this Flood Map Project. UDFCD shall ensure that the procurement for all contractors used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

Part 13 may be downloaded in PDF or text format from the U.S. Government Printing Office Web site at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr13_02.html.

SECTION 10—FINANCIAL REPORTING

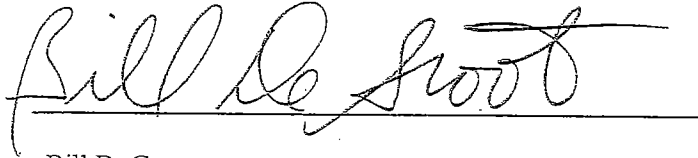
Because funding has been provided to UDFCD by FEMA, financial reporting requirements for UDFCD will be in accordance with Cooperative Agreement Articles V and VI.

SECTION 11—POINTS OF CONTACT

The points of contact for this Flood Map Project are Steve Olsen, the FEMA Regional Project Officer; Bill DeGroot, the Project Manager for UDFCD; or subsequent personnel of comparable experience

who are appointed to fulfill these responsibilities. When necessary, the assistance of the MCC should be requested through the FEMA Project Officer, Max Yuan.

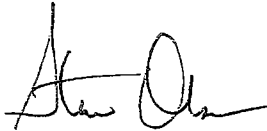
Each party has caused this MAS to be executed by its duly authorized representative.



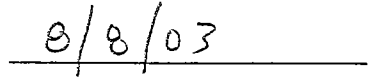
Bill DeGroot
Project Manager
Urban Drainage and Flood Control District



Date



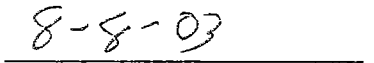
Steve Olsen
Regional Project Officer
Federal Emergency Management Agency, Region 8




Date



Max Yuan
Project Officer
Federal Insurance and Mitigation Administration



Date



Brian Hyde

Project Manager
Colorado Water Conservation Board



Date

Max Yuan
Project Officer
Federal Insurance and Mitigation Administration

Date



Brian Hyde

Project Manager
Colorado Water Conservation Board

8/8/03

Date

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